

THE EXTINCT SLOTH, *MEGALONYX*
(MAMMALIA: XENARTHRA),
FROM THE UNITED STATES
MID-ATLANTIC CONTINENTAL SHELF

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Abstract.—A radius of the ground sloth, *Megalonyx*, from off the coast of New Jersey, is the first evidence that ground sloths, along with mastodons and mammoths, inhabited this region during glacial lowering of sea level in the Pleistocene.

During the Pleistocene large areas of the continental shelf were exposed by the lowering of sea level and were inhabited by the terrestrial Pleistocene fauna. Subsequent sea level rise has made recovery and documentation of the species that inhabited this region difficult. Most discoveries of vertebrate remains from the continental shelf are accidental; hence, the currently known diversity of terrestrial vertebrates from this area is low. Evidence of a ground sloth from the continental shelf contributes to our knowledge of the faunal diversity of this area during the Pleistocene.

In July 1966, Ronald Stires of the trawler *Kingfisher* recovered a partial left radius of the ground sloth *Megalonyx* while dredging on the continental shelf off Sandy Hook, New Jersey. Location of the specimen was 40°16.5'N latitude and 73°54.5'W longitude. The specimen was recovered from a bottom depth of 19 meters.

Description of specimen.—The radius (USNM 25175) (Fig. 1) lacks the distal end; the proximal end is eroded. The specimen is dark in color and well permineralized. Breakage of the distal end is angular, with some rounding of the edges of the breaks. Part of the articular surface of the proximal end is preserved but the perimeter of this area has weathered, exposing trabecular bone. There is a slight amount of weathering of the overall surface of the bone. These

modifications preclude satisfactory measurements of original dimensions, but the following permit an approximation of the size of the bone: anteroposterior diameter of the proximal articular surface—53 mm, mediolateral diameter of proximal end—51 mm, anteroposterior width of shaft, distally—88 mm. Despite the fragmentary nature of the specimen, enough is preserved to show the distinctive sigmoid curvature of the shaft, characteristic of the radii of megalonychid sloths, in which the distal end is offset anteriorly relative to the proximal end. The distal end of the shaft is compressed mediolaterally relative to the proximal end, which is roughly equidimensional. The medial surface is slightly concave with a complementary convexity on the lateral surface. Preserved on the medial surface are the muscle scars of the *m. pronator quadratus*. Proximal to the offset of the shaft the bone is circular in cross section. The radial tuberosity is large and well developed and offset medially on the posterior edge. There is no indication of an epiphyseal line on the proximal end, which, along with the general massiveness of the bone and rugosity of the muscle scars, suggest that it is probably from an adult.

Biogeography.—Whitmore et al. (1967), Oldale et al. (1987) and Gallagher et al. (1989) have documented the distribution of mammoths and mastodons on the Atlantic



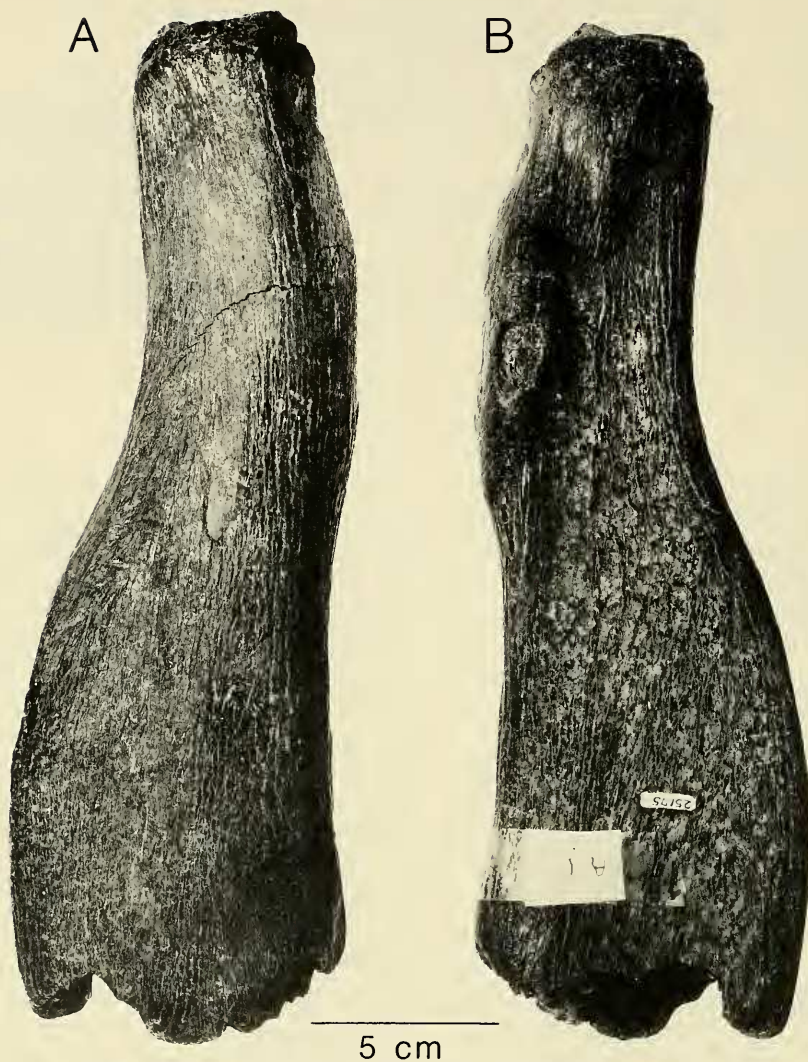
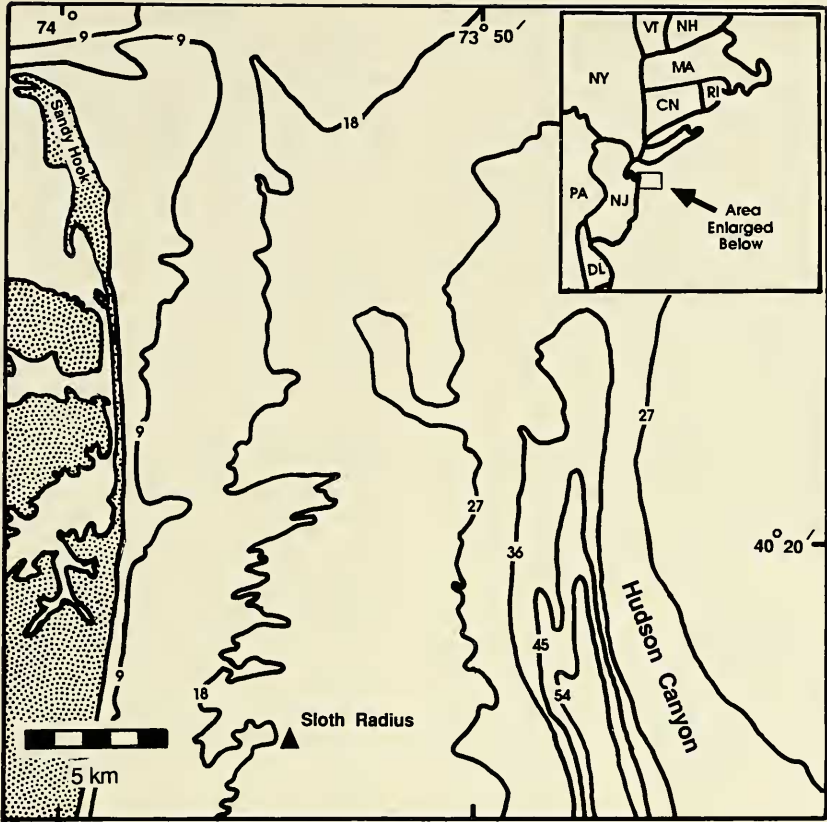


Fig. 1. *Megalonyx* cf. *jeffersonii*, partial left radius, USNM 25175. A. Lateral view. B. Medial view.

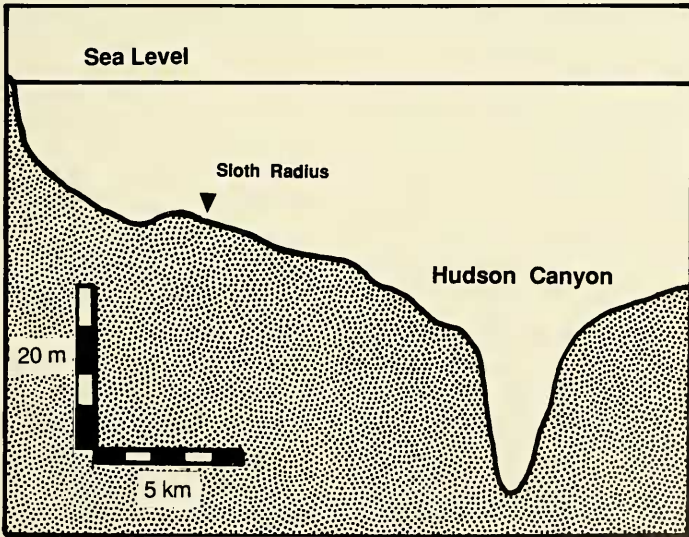
continental shelf of North America. Although ground sloths have been mentioned as part of the fauna recovered from the continental shelf, no genus or species has ever been given. The specimen described here

definitely can be referred to the genus *Megalonyx*, and is probably *M. jeffersonii* although, given the fragmentary nature of the specimen, identification to species is tenuous. *Megalonyx jeffersonii* is the only late

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 Fig. 2. A. Approximate locality at which *Megalonyx* radius was recovered. Depth in meters. B. Cross section along 40°6.5'N latitude showing relationship of location of *Megalonyx* radius to shore and the submarine Hudson Canyon. Map modified from Veatch and Smith (1939). (Original depths for map and cross section from Veatch and Smith [1939] were in feet and fathoms.)



A



B

Pleistocene species of the genus (McDonald 1977), and the size of the specimen is within the range of that species.

Megalonyx is the most widespread of the North American ground sloth genera and was present in the northeastern United States at least as early as the Irvingtonian (Middle Pleistocene). Late Pleistocene records for the genus in this region are not uncommon (Parris 1983), so it is not unexpected that it would be among the megafauna migrating onto the continental shelf exposed by the lowering of sea level.

The ecology of *Megalonyx* commonly has been interpreted as that of a forest edge browser (Stock 1925). Utilization of gallery forests along rivers also has been postulated (McDonald & Anderson 1983), although the pattern could be biased by the fact that vertebrate remains are more readily buried and recovered along rivers than in upland habitats. As sea level lowered and rivers extended onto the continental shelf *Megalonyx* may have utilized the expanding gallery forests if this was indeed its preferred habitat. The proximity of the location of the specimen described here to the Hudson River and its canyon on the continental shelf (Fig. 2) fits this pattern. As noted by Dillon & Oldale (1978), outflow of glacial meltwater in the Hudson River Channel eroded a broad valley across the continental shelf until about 12,000 years B.P.

The fragmentary and abraded nature of the specimen does suggest the alternative interpretation that the specimen does not represent primary burial of an individual inhabiting and dying on the exposed continental shelf. The proximity of the specimen to the mouth of the Hudson River and nearness to shore make secondary transport of the specimen a factor to consider.

Because of the permineralization of the specimen no absolute date is possible. However if the specimen represents primary deposition on the continental shelf and not secondary transport, then some inferences regarding the time of its presence on the

continental shelf can be made. Although *Megalonyx* was the only genus of ground sloth to range as far north as Alaska (Stock 1942), this was probably during an interglacial phase and does not necessarily indicate that the genus was capable of better thermoregulation than other ground sloths (McNab 1985). Bloom (1983) states that the Atlantic Coastal Plain from lower New York Harbor eastward and northward was glaciated north of latitude 40°30'N. The proximity of the location of this specimen (40°16.5'N longitude) to Bloom's boundary would place it rather close to the edge of the continental glacier during glacial maximum. The location of the specimen is probably too close to the ice front at this time for the animal's thermoregulatory capabilities, based on our current understanding of ground sloth physiology. It is more likely that the presence of *Megalonyx* on the continental shelf post-dates the retreat of the continental glacier from the region. Whitmore et al. (1967) provide dates of around 11,000 years for intertidal salt marsh peat deposits on the Atlantic continental shelf, indicating subaerial exposure until this time, so the sloth remains may be as young as 11,000 years. Further confirmation of the presence and timing of ground sloths on the Mid Atlantic Continental Shelf will require the recovery of additional specimens.

Acknowledgments

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